

Discipline: <b>EE</b>	Semester:6 <sup>TH</sup>	Name of the Teaching Faculty: RADHA KRUSHNA MALLICK
Subject: RENEWABLE ENERGY	No. of Days/per week class allotted:	Semester From Date: 14.02.2023 To Date:23.05.2023 No. of Weeks; 15
Week	Class Day	Theory/Practical Topics
1 <sup>st</sup>	01	Introduction to Renewable energy: 1.1. Environmental consequences of fossil fuel use.
	02	1.2. Importance of renewable sources of energy
	03	1.3. Sustainable Design and developmen
	04	1.4. Types of RE sources. . Limitations of RE sources
	05	Revision
2 <sup>nd</sup>	01	1.6. Present Indian and international energy scenario of conventional and RE sources
	02	Solar photovoltaic system-Operating principle.
	03	Photovoltaic cell concepts 2.2.1. Cell, module, array, Series and parallel connections. Maximum power point tracking (MPPT).
	04	Photovoltaic cell concepts 2.2.1. Cell, module, array, Series and parallel connections. Maximum power point tracking (MPPT).
	05	Revision
3 <sup>rd</sup>	01	Photovoltaic cell concepts 2.2.1. Cell, module, array, Series and parallel connections. Maximum power point tracking (MPPT).
	02	Classification of energy Sources.
	03	Classification of energy Sources.
	04	Extra-terrestrial and terrestrial Radiation.
	05	Revision
4 <sup>th</sup>	01	Extra-terrestrial and terrestrial Radiation.
	02	Azimuth angle, Zenith angle, Hour angle, Irradiance, Solar constant
	03	Azimuth angle, Zenith angle, Hour angle, Irradiance, Solar constant
	04	Solar collectors, Types and performance characteristics,
	05	Revision
5 <sup>th</sup>	01	Solar collectors, Types and performance characteristics,
	02	Applications: Photovoltaic - battery charger, domestic lighting, street lighting, water pumping, solar cooker, Solar Pond.
	03	Applications: Photovoltaic - battery charger, domestic lighting, street lighting, water pumping, solar cooker, Solar Pond.
	04	Applications: Photovoltaic - battery charger, domestic lighting, street lighting, water pumping, solar cooker, Solar Pond.
	05	Revision
6 <sup>th</sup>	01	Introduction to Wind energy
	02	Wind energy conversion
	03	Types of wind turbines
	04	Aerodynamics of wind rotors
	05	Revision

*Handwritten signature*

*RK Mallik  
6.2.23*

7 <sup>th</sup>	01	Wind turbine control systems; conversion to electrical power:
	02	Wind turbine control systems; conversion to electrical power:
	03	Induction and synchronous generators
	04	Grid connected and self excited induction generator operation
	05	Revision
8 <sup>th</sup>	01	Grid connected and self excited induction generator operation
	02	Constant voltage and constant frequency generation with power electronic control.
	03	Single and double output systems
	04	Characteristics of wind power plant.
	05	Tutorial class
9 <sup>th</sup>	01	Energy from Biomass.
	02	Biomass as Renewable Energy Source
	03	Biomass as Renewable Energy Source
	04	Types of Biomass Fuels - Solid, Liquid and Gas.
	05	. Tutorial class
10 <sup>th</sup>	01	Types of Biomass Fuels - Solid, Liquid and Gas.
	02	Combustion and fermentation.
	03	Anaerobic digestion.
	04	Types of biogas digester
	05	Tutorial class
11 <sup>th</sup>	01	Wood gassifier.
	02	Pyrolysis
	03	Applications: Bio gas, Bio diesel
	04	Applications: Bio gas, Bio diesel
	05	Tutorial class
12 <sup>th</sup>	01	Tidal Energy: Energy from the tides, Barrage and Non Barrage Tidal power systems
	02	Tidal Energy: Energy from the tides, Barrage and Non Barrage Tidal power systems
	03	Ocean Thermal Energy Conversion (OTEC).
	04	Ocean Thermal Energy Conversion (OTEC).
	05	Tutorial class
13 <sup>th</sup>	01	Geothermal Energy – Classification.
	02	Geothermal Energy – Classification.
	03	Geothermal Energy – Classification.
	04	Hybrid Energy Systems
	05	Tutorial class
14 <sup>th</sup>	01	Hybrid Energy Systems
	02	Need for Hybrid Systems.

*Handwritten signature*

*Handwritten signature and date: 5.3.23*

	03	Need for Hybrid Systems.
	04	Diesel-PV, Wind-PV, Microhydel-PV
	05	Tutorial class
15 <sup>th</sup>	01	Diesel-PV, Wind-PV, Microhydel-PV
	02	Electric and hybrid electric vehicles
	03	Electric and hybrid electric vehicles
	04	Electric and hybrid electric vehicles
	05	Tutorial class
		1.

*D. K. S.*

*6/2/23*